

HCV NS4B Wild type DNA Sequence (783 nucleotides):

GCCTCACACCTCCCTAACATCGAACAGGGAAATGCAAGCTCGCCGAACAATTCAAACAGAAGGC
AATCGGGTTGCTGAAACAGCCACCAAGCAAGCGGAGGCTGCTGCTCCCGTGGTGAATCCA
AGTGGCGGACCCCTCGAACGCCCTGGCGAAGCATATGTGGAATTTCATCAGCGGGATACAAT
ATTTAGCAGGCTTGTCACACTGCCTGGCAACCCCGCGATAGCATCACTGATGGCATTACAG
CCTCTATCACCAGCCCCGCTCACCAACATACCCCTCTGTTAACATCCTGGGGGATGGG
TGGCCGCCAACATTGCTCCTCCCAGCGCTGCTCTGCTTCTGAGGCGCCGGATCGCTGGAGC
GGCTGTTGGCAGCATAGGCCTTGGGAAAGGTGCTTGTGGATAATTGGCAGGTTATGGAGCAGG
GGTGGCAGGGCGCTCGTGGCTTAAGGTCAATGAGCGGGAGATGCCCTCCACCGAGGACC
TGGTTAACCTACTCCCTGCTATCCTCTCCCTGGCGCCCTAGTCGTCGGGTCGTGCGCAGC
GATACTGCGTCGGCACGTGGGCCAGGGGAGGGGCTGTGCA GTGGATGAACCGGCTGATAG
CGTTGCGTTCCGGGGTAACCACGTCTCCCCACGCACTATGTGCCTGAGAGCGACGCTGCAG
CACGTGTCACTCAGATCCTCTAGCTTACCATCACTCAGCTGCTGAAGAGGCTTACCAAGTG
GATCAACGAGGACTGCTCCACGCCATGC

HCV NS4B Wild type Protein Sequence (261 amino acids):

ASHLPYIEQGMQLAEQFKQKAIGLLQTATKQAEAAAPVVESKWRTLBAFWAKHMWNFISGIQYL
AGLSTLPGNPAIASLMAFTASITSPLTTQHTLLFNILGGWVAAQLAPPSAASAFVGAGIAGAAVGSI
GLGKVLVDILAGYGAGVAGALVAFKVMMSGEMPSTEDLVNLLPAILSPGALVVGVVCAAILRRHV
GPGEDEAVQWMNRLLIAFASRGNHVSPTHYVPESDAARVTQILSSLTITQLLKRLHQWINEDCSTPC

FIGURE 1

HCV NS4B 232559 variant DNA Sequence (783 nucleotides):

GCCTCACACCTCCCTTACATCGAACAGGGAATGCAGCTGCCGAACAATTCAAACAGAAAGGC
AATCGGGTTGCTGCAAACAGCACCAGCAAGCAAGCGGAGGCTGCTGCTCCGTGGTCCAATCCA
AGTGGCGGACCCCTCGAACGCCCTCTGGCGAGGCATATGTGGAATTTCATCAGCGGGATACAAT
ATTTAGCAGGCTTGTCCACTCTGCCTGGCAACCCCGCGATAGCATCACTGATGGCATTACAG
CCTCTATCACCAGCCCCTCACCAACATAACCCCTCTGTTAACATCCTGGGGGATGGG
TGGCCGCCAACCTGCTCCTCCCAGCGCTGCTCTGCTTAGTCGCCGCATCGCTGGAGC
GGCTGTTGGCAGCATAGGCCCTTGGGAGGGTGTGGATATTTGGCAGGTTATGGAGCAGG
GGTGGCAGGCCGCGCTGTGGCTTAAGGTCACTGAGCGGCGAGATGCCCTCCACCGAGGACC
TGGTCAACCTACTCCCTGCTATeCTCeCCCTGGCGCCCTAGTCGTGGGTGTCGTGCGCAGC
GATACTGCGTGGCACGTGGCCCAGGGAGGGGCTGTGCAKTGGATGAACCGGCTGATAT
CGTCGCTTCGCGGGTAACCACGTCTCCCCACGCACTATGTGCCTGAGAGCGACGCTGCAG
CACGTGTCACTCAGATCCTCTAGTCTTACCATCACTCAGCTGCTGAAGAGGCTTACCAAGTG
GATCAACGAGGACTGCTCCACGCCATGC

HCV NS4B 232559 variant Protein Sequence (261 amino acids):

ASHLPYIEQGMQLAEQFKQKAIGLLQTATKQAEAAAAPVVESKWRTEAFWARHMWNFISGIQYL
AGLSTLPGNPAIASLMAFTASITSPLTTQHTLLFNILGGWVAAQLAPPSAASAFVVAGAAVGSI
GLGKVLVDILAGYAGVAGALVAFKVMMSGEMPSTEDELVNLLPAILSPGALVVGVVCAAILRRHV
GPGEHAVXWMNRLISFASRGNHVSPHYVPESDAARVTQILSSLTITQLLKRLHQWINEDCSTPC

Figure 2

Figure 3A

Flaviviridae species, their serotypes, strains and isolates**1. Tick-borne viruses****Mammalian tick-borne virus group**

<i>Gadgets Gully virus</i>	<u>[AF013374]</u>	(GGYV)
<i>Kadam virus</i>	<u>[AF013380]</u>	(KADV)
<i>Kyasanur Forest disease virus</i>	<u>[X74111]</u>	(KFDV)
<i>Langat virus</i>		(LGTV)
strain TP21	<u>[M73835]</u>	
strain TP21	<u>[M86650]</u>	
<i>Omsk hemorrhagic fever virus</i>	<u>[X66694]</u>	(OHFV)
<i>Powassan virus</i>	<u>[L06436]</u>	(POWV)
<i>Royal Farm virus</i>	<u>[AF013398]</u>	(RFV)
Karshi virus	<u>[AF013381]</u>	(KSIV)
<i>Tick-borne encephalitis virus</i>		(TBEV)
European subtype		
Neudoerfl virus	<u>[M27157]</u>	(NEUV)
Neudoerfl virus	<u>[M33668]</u>	(NEUV)
Far Eastern subtype	<u>[X07755]</u>	
Sofjin virus	<u>[X07755]</u>	(SOFV)
Siberian subtype		
Vasilchenko	<u>[L40361]</u>	
<i>Louping ill virus</i>		(LIV)
LIV strain 369/T2	<u>[M59376]</u>	
LIV strain SB 526	<u>[M94957]</u>	
LIV strain SB 526	<u>[X59815]</u>	
Negishi virus	<u>[M94956]</u>	(NEGIV)
Irish subtype	<u>[X86784]</u>	
British subtype	<u>[D12937]</u>	
Spanish subtype	<u>[X77470]</u>	
Turkish subtype	<u>[X69125]</u>	

Figure 3B

Seabird tick-borne virus group		
<i>Meaban virus</i>		(MEAV)
Brest ART707	<u>[AF013386]</u>	
<i>Saumarez Reef virus</i>		(SREV)
CSIRO-4	<u>[X80589]</u>	
<i>Tyulenyi virus</i>		(TYUV)
Three Arch Rock	<u>[X80588]</u>	
2. Mosquito-borne viruses		
Aroa virus group		
<i>Aroa virus</i>		(AROAV)
VenA-1809	<u>[AF013362]</u>	
<i>Bussuquara virus</i>		(BSQV)
BeAn 4073	<u>[AF013366]</u>	
<i>Iguape virus</i>		(IGUV)
SP An71686.	<u>[AF013375]</u>	
<i>Naranjal virus</i>		(NJLV)
25008	<u>[AF013390]</u>	
Dengue virus group		
<i>Dengue virus</i>		(DENV)
Dengue virus 1	<u>[M23027]</u>	(DENV-1)
Dengue virus 2	<u>[M19197]</u>	(DENV-2)
Dengue virus 3	<u>[A34774]</u>	(DENV-3)
Dengue virus 4	<u>[M14931]</u>	(DENV-4)
<i>Kedougou virus</i>		(KEDV)
Dak Aar D1470	<u>[AF013382]</u>	
Japanese encephalitis virus group		
<i>Cacipacore virus</i>		(CPCV)
BeAn 327600	<u>[AF013367]</u>	
<i>Koutango virus</i>		(KOUV)
Dak Ar D1470	<u>[AF013384]</u>	

Figure 3C

<i>Japanese encephalitis virus</i>		(JEV)
strain JaOArS982	<u>[M18370]</u>	
<i>Murray Valley encephalitis virus</i>	<u>[X03467]</u>	(MVEV)
Alfuy virus	<u>[AF013360]</u>	(ALFV)
<i>St. Louis encephalitis virus</i>	<u>[M16614]</u>	(SLEV)
<i>Usutu virus</i>		(USUV)
SAAR-1776	<u>[AF013412]</u>	
<i>West Nile virus</i>		(WNV)
33/G8; 34/F6	<u>[M12294]</u>	
Kunjin virus	<u>[D00246]</u>	(KUNV)
<i>Yaounde virus</i>		(YAOV)
DakArY 276	<u>[AF013413]</u>	(YAOV)
<i>Kokobera virus group</i>		
<i>Kokobera virus</i>		(KOKV)
AusMRM 281	<u>[AF013383]</u>	(KOKV)
Stratford virus	<u>[AF013407]</u>	(STRV)
<i>Ntaya virus group</i>		
<i>Bagaza virus</i>		(BAGV)
DakAr B209	<u>[AF013363]</u>	(BAGV)
<i>Ilheus virus</i>	<u>[AF013376]</u>	(ILHV)
Rocio virus	<u>[AF013397]</u>	(ROCV)
<i>Israel turkey meningoencephalomyelitis virus</i>	<u>[AF013377]</u>	(ITV)
<i>Ntaya virus</i>	<u>[AF013392]</u>	(NTAV)
<i>Tembusu virus</i>	<u>[AF013408]</u>	(TMUV)
<i>Spondweni virus group</i>		
<i>Zika virus</i>		(ZIKV)
MR-766	<u>[AF013415]</u>	(ZIKAV)
Spondweni virus	<u>[AF013406]</u>	(SPOV)
<i>Yellow fever virus group</i>		
<i>Banzi virus</i>		(BANV)

Figure 3D

SAH 336	<u>[L40951]</u>	
<i>Bouboui virus</i>		(BOUV)
DakAr B490	<u>[AF013364]</u>	
<i>Edge Hill virus</i>		(EHV)
Aus C-281	<u>[AF013372]</u>	
<i>Jugra virus</i>		(JUGV)
P9-314	<u>[AF013378]</u>	
Dak An D4600	<u>[AF013400]</u>	
<i>Saboya virus</i>		(SABV)
Potiskum virus		(POTV)
IBAN 10069	<u>[AF013395]</u>	
<i>Sepik virus</i>		(SEPV)
MK7148	<u>[AF013404]</u>	
<i>Uganda S virus</i>		(UGSV)
<i>Wesselsbron virus</i>		(WESSV)
<i>Yellow fever virus</i>		(YFV)
17D (vaccine strain)	<u>[X03700]</u>	
Pasteur 17D-204 (vaccine strain)	<u>[X15062]</u>	
strain 1899/81		
3. Viruses with no known arthropod vector		
<i>Entebbe virus group</i>		
<i>Entebbe bat virus</i>		(ENTV)
UgIL-30	<u>[AF013373]</u>	
<i>Sokoluk virus</i>		(SOKV)
LEIV-400K	<u>[AF013405]</u>	
<i>Yokose virus</i>		(YOKV)
Oita 36	<u>[AF013414]</u>	
<i>Modoc virus group</i>		
<i>Apoi virus</i>	<u>[AF013361]</u>	(APOIV)
<i>Cowbone Ridge virus</i>		(CRV)

Figure 3E

W-10986	<u>[AF013370]</u>	
<i>Jutiapa virus</i>		(JUTV)
JG-128	<u>[AF013379]</u>	
<i>Modoc virus</i>		(MODV)
M544	<u>[AF013387]</u>	
<i>Sal Vieja virus</i>		(SVV)
38TWM-106	<u>[AF013401]</u>	
<i>San Perlita virus</i>		(SPV)
71V-1251	<u>[AF013402]</u>	
Rio Bravo virus group		
<i>Bukalasa bat virus</i>		(BBV)
UGBP-111	<u>[AF013365]</u>	
<i>Carey Island virus</i>		(CIV)
P70-1215	<u>[AF013368]</u>	
<i>Dakar bat virus</i>		(DBV)
209	<u>[AF013371]</u>	
<i>Montana myotis leukoencephalitis virus</i>		(MMLV)
40649	<u>[AF013388]</u>	
<i>Phnom Penh bat virus</i>		(PPBV)
CAMA-38D	<u>[AF013394]</u>	
<i>Batu Cave virus</i>		(BCV)
P70-1459	<u>[AF013369]</u>	
<i>Rio Bravo virus</i>		(RBV)
M-64	<u>[AF013396]</u>	

Tentative Species in the Genus

<i>Tamana bat virus</i>		(TABV)
<i>Cell fusing agent virus</i>	<u>[M91671]</u>	(CFAV)

Figure 3F

Genus	Pestivirus
-------	------------

Type Species	Bovine viral diarrhea virus 1	(BVDV)
Species, their serotypes, strains and isolates		
Border disease virus (sheep)		(BDV)
BD31	[U70263]	
X818	[AF037405]	
Bovine viral diarrhea virus 1		(BVDV-1)
NADL	[M31182]	
Osloss	[M96687]	
SD-1	[M96751]	
CP7	[U63479]	
Bovine viral diarrhea virus 2		(BVDV-2)
strain 890	[U18059]	
C413	[AF002227]	
Classical swine fever virus		(CSFV)
Alfort/187	[X87939]	
Alfort-Tübingen	[J04358]	
Brescia	[M31768]	
C strain	[Z46258]	
(Hog cholera virus)		(HCV)

Tentative Species in the Genus

Pestivirus of giraffe (H138 (Giraffe-1))			
---	--	--	--

Genus	Hepacivirus
-------	-------------

Type Species	Hepatitis C virus	(HCV)
Species, their serotypes, strains and isolates		
Hepatitis C virus		(HCV)
HCV genotype 1		

Figure 3G

subtype 1a	<u>[M62321]</u>	(HCV-1)
subtype 1b	<u>[D90208]</u>	(HCV-J)
HCV genotype 2		
subtype 2a	<u>[D00944]</u>	(HCV-J6)
subtype 2b	<u>[D01221]</u>	(HCV-J8)
HCV genotype 3		
subtype 3a	<u>[D17763]</u>	(HCV-NZL1)
subtype 10a	<u>[D63821]</u>	(HCV-JK049)
HCV genotype 4		
subtype 4a	<u>[Y11604]</u>	(HCV-ED43)
HCV genotype 5		
subtype 5a	<u>[Y13184]</u>	(HCV-EVH1480)
HCV genotype 6		
subtype 6a	<u>[Y12083]</u>	(HCV-EUHK2)
subtype 11a	<u>[D63822]</u>	(HCV-JK046)

Unassigned Viruses in the Family

<i>GB virus A</i>	<u>[U22303]</u>	(GBV-A)
<i>GBV-A-like agents</i>	<u>[U94421]</u>	(GBV-A-like agents)
<i>GB virus B</i>	<u>[U22304]</u>	(GBV-B)
<i>GB virus C</i>	<u>[U36380]</u>	(GBV-C)
<i>Hepatitis G virus</i>	<u>[U44402]</u>	(HGV-1)
<i>GB virus C troglodytes</i>	<u>[AF070476]</u>	(GBV-C)
<i>HGV-Iowan</i>	<u>[AF121950]</u>	(HGV-Iowan)